

WHAT IS CLAIMED IS:

1. A method for reconstructing an extended color gamut digital image from a limited color gamut digital image represented in a particular limited color gamut color space which was derived from an initial extended color gamut image, comprising:

- a) transforming the limited color gamut digital image in the particular limited color gamut color space to a reference color space forming a limited color gamut digital image in a reference color space;
- b) providing a modified inverse color adjustment function which, when such function operates on the limited color gamut digital image in the reference color space, produces the reconstructed extended color gamut digital image having reduced highlight color saturation for highlight color values when compared with corresponding color values of the initial extended color gamut image; and
- c) operating on the limited color gamut digital image in the reference color space with the modified inverse color adjustment function to form the reconstructed extended color gamut digital image having reduced levels of color contouring and quantization artifacts.

2. The method according to claim 1 wherein the reference color space has an extended color gamut sufficient to represent limited color gamut digital images stored in a set of different limited color gamut color spaces.

3. The method according to claim 1 wherein different modified inverse color adjustment functions are used depending on the particular limited color gamut color space used to represent the limited color gamut digital image.

4. The method according to claim 1 wherein a compromise modified inverse color adjustment function is used that produces reduced levels of

color contouring and quantization artifacts for a set of different limited color gamut color spaces.

5. The method according to claim 4 wherein the compromise modified inverse color adjustment function is optimized to weight certain limited color gamut color spaces more highly.

6. The method according to claim 4 wherein the compromise modified inverse color adjustment function is designed so as to not substantially limit the color gamut of the limited color gamut digital images in the set of different limited color gamut color spaces.

7. The method according to claim 1 wherein the step of transforming the limited color gamut digital image in the particular input color space to the reference color space includes the modification of certain colors in the limited color gamut digital image so that acceptable results can be obtained using a single modified inverse color adjustment function independent of the particular limited color gamut color space.

8. The method according to claim 1 further including the step of applying an image enhancement algorithm to the reconstructed extended color gamut digital image.

9. A method for reconstructing an extended color gamut digital image from a limited color gamut digital image represented in a particular limited color gamut color space which was derived from an initial extended color gamut image, comprising:

a) providing a set of modified inverse color adjustment functions corresponding to a set of limited color gamut color spaces which, when such functions operate on a limited color gamut digital image in the corresponding limited color gamut color space, produces the reconstructed extended color gamut

digital image having reduced highlight color saturation for highlight color values when compared with corresponding color values of the initial extended color gamut image;

- b) selecting the modified inverse color adjustment function corresponding to the particular limited color gamut color space; and
- c) operating on the limited color gamut digital image in the particular limited color gamut color space with the selected modified inverse color adjustment function to produce the reconstructed extended color gamut digital image having reduced levels of color contouring and quantization artifacts.

10. A method for reconstructing extended color gamut digital image from a limited color gamut digital image which was derived from an initial extended color gamut image, comprising:

- a) providing a modified inverse color adjustment function which, when such function operates on the limited color gamut digital image, produces the reconstructed extended color gamut digital image having reduced highlight color saturation for highlight color values when compared with corresponding color values of the initial extended color gamut image;
- c) operating on the limited color gamut digital image with the modified inverse color adjustment function to construct the reconstructed extended color gamut digital image having reduced levels of color contouring and quantization artifacts; and
- d) applying an image enhancement algorithm to the reconstructed extended color gamut digital image.

11. A computer program product which practices the method according to claim 1.

12. A computer program product which practices the method according to claim 9.

13. A computer program product which practices the method according to claim 10.